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Education through Play. By H. S. CURTIS. New York: Macmillan, 1915.

The fact that this book has been published so nearly at the same time with another recent authority and reference book on play—Forbush's *Manual of Play*—shows the tendency of the present time in reverting almost spasmodically from formal to informal methods of physical training. Like the author of the former book, recently reviewed in these pages, Mr. Curtis has succeeded in doing a splendid piece of work. It differs from the other book mentioned in that it puts little stress on the side of unorganized games and plays. The material here is complete in that it shows first of all what play is and brings out the three well-known theories of play: the theory of surplus energy, play as a method of education, and G. Stanley Hall's recapitulation theory of play. There is a discussion of the place of play in physical training. Possibly here the author is excusable for veering a little too far from the idea of formal gymnastics in physical education which by the leading educators is still considered necessary in a complete scheme of their subject. The relation of play to the training of the intellect and to the formation of habits and character is emphasized by practical illustrations of interest to the casual reader. Since the author seems to speak with authority of play as it develops and differs in the several European countries, the comparative side of the subject is well brought out, and finally, together with helpful suggestions of the most successful playground of our own American cities, there are given definite data in regard to the best and quickest methods of starting playgrounds, recreation centers, school camps, or athletics in secondary schools and colleges. A brief appendix gives perhaps unnecessarily the rules for some of the common games which may be used on many occasions. This book has already been adopted as a text in some normal schools where courses on play are given and itself helps in determining the need and value of such a course in a well-organized curriculum whether of physical or general education.

Practical Zoölogy. By ROBERT W. HEGNER. New York: Macmillan, 1915. Pp. xv+495.

Practical Zoölogy is a text designed for use in secondary schools. The author begins with a discussion of the insect group, that being the one which he feels will be most familiar to the average student. After giving but slight attention to the structure of a typical insect (the grasshopper), he takes up the question of the economic importance of the phylum. In this connection the following subjects are treated: insects injurious to vegetation, parasitic insects, household pests, beneficial insects, insects and their relation to disease transmission. Hegner then discusses the subject of classification in general and of the Insecta in particular. In succeeding chapters he deals with the invertebrate subkingdom in reverse order, beginning with the Anthropoda and ending,

in chap. xxv, with the Protozoa. In the next chapter, an introduction to the subkingdom of Vertebrates, the author treats the fundamental subjects of the nature of protoplasm and the cell, and kindred topics. His first chapter on Vertebrates deals with the frog, its structure, and its life-history. The author follows this with successive chapters on the various vertebrate phyla in the usual order, closing with a chapter on the "Progress of Zoölogy" which serves to familiarize the student with certain of the great names of science and with the service of the government departments in accumulating scientific data and encouraging scientific research.

Hegner's text strongly reflects the modern tendency toward applied science, which is gradually coming to have a significant influence upon the presentation of the biological sciences. As a practical and, to use the author's own term, civic treatment of zoölogy, it is particularly interesting in the stress laid on the ecological side of the subject. The chapters on Insecta and on the vertebrate phyla are unusually good from this standpoint. The text supplies a basic interest in this regard, which will help any teacher in arousing enthusiasm for field work. The knowledge of the environment of animals and a study of them in relation to their natural habitat is too vital a part of zoölogy to be slighted as is so often done in secondary schools. The economic aspect of the subject is treated in a practical and well-balanced manner, and not at the expense of the morphological phase, unless it be in the matter of illustrations. The chapters on birds are particularly admirable. Bird-study is too often omitted from high-school curricula, no doubt because of the fact that, from a purely evolutionary and structural point of view, birds are not essentially interesting, but it should be included since the general and generous distribution of the group and its economic significance certainly entitle it to recognition as an important animal phylum.

Hegner follows a somewhat unusual classification and an order of procedure which, under some conditions, might prove impractical. His classification rates Nematelminthes and Annelida as separate phyla (phylum 5 and phylum 6, respectively) instead of grouping them as classes under the common phylum Coelhelminthes, as is rather generally done. The advisability of such a sequence as the author adopts may be questioned. The attempt to proceed from the known to the unknown in presenting a biological science generally involves an illogical method of procedure, which is likely to be confusing to the beginning student and which sacrifices or at least obscures an understanding of the evolutionary principles. Moreover, that the student shall have made his study of the lower forms of life without the preliminary study of the protoplasmic and cellular basis of life seems particularly unfortunate when one realizes how much better these same simple forms illustrate the nature of protoplasm than do the more complex animals. A sequence of chapters, however, is easily regulated by the teacher to meet the needs of her group of students.

On the whole, therefore, the author of *Practical Zoölogy* seems to have admirably realized his aim, to combine a general knowledge of animals and of zoölogical principles with a discussion of the relations of animals to man, in such a way as to interest the student.

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The Teaching of Handwriting. By FRANK N. FREEMAN. New York: Houghton Mifflin Co., 1914. Pp. vii+156. \$0.60.

Professor Freeman's book gives an admirable summary of what educational science knows or reasonably conjectures about the learning and teaching of handwriting. A noteworthy feature, too rare in books both on educational theory and on practice, is the scrupulous care exercised in showing where definitely established and verifiable facts end and opinion begins. The meagerness of exact knowledge in so important a skill as handwriting is indicated by the fact that in the sections on the physiology of writing and on the psychology of learning to write the author is compelled to draw so largely upon the general principles of voluntary control and the acquisition of skill rather than upon a special body of information concerning writing itself.

A clear analysis of the development of voluntary control and the attainment of skill and automaticity in writing co-ordinations is followed by a judicious discussion of hygienic requirements for posture, for the eyes, and for movement. In the section on the teaching of handwriting the value of good form for efficient action is emphasized in such matters as penholding and the position of the hand, wrist, arm, and body. On the learning process itself such recommendations as these occur: "Repetition must be accompanied by improvement to be of value. . . ." "Whenever practice is for the purpose of improvement, then, it must be carried on while the pupil is giving full attention to what he is doing." "There is evidence in support of the belief that, contrary to prevailing opinion, plateaus are not essential." "The pupil's achievement should chiefly be compared with his own past achievement rather than with that of others." "It is probably never advantageous, at least in the elementary school, to extend the practice period beyond twenty minutes." "Imitation of a person writing is better than imitation of a copy merely." General and specific physiological and psychological principles are brought to bear in very definite recommendations for writing in the primary, intermediate, and grammar grades.

For the measurement of progress in writing, in addition to such scales of general merit as those of Thorndike and Ayers, standards of speed and analytic scales for use in diagnosis and correction of defects in uniformity of slant, uniformity of alignment, quality of line, letter formations, and spacing are set up. The objective analysis of general merit into the elements on which it